

ABSTRACT

Compositions, materials incorporating the compositions, and methods of use thereof, are disclosed. In one embodiment, the composition includes a metal nitrate selected from d-block metal nitrates and f-block metal nitrates and a metal salt having weakly bound counter anions. The metal of the metal salt having weakly bound counter anions is selected from a d-block metal and an f-block metal. Another embodiment of the composition includes a first polyoxometalate having a first metal selected from a d-block metal and an f-block metal and a second polyoxometalate having a second metal selected from a d-block metal and an f-block metal. The first metal being an open coordinate site of the first polyoxometalate. In addition, the first metal has a nitrate terminal ligand. The second metal being an open coordinate site of the second polyoxometalate. In addition, the second metal has a halide terminal ligand.